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(54) Steering damper system

(57) The invention generates a damping force in a steering damper only upon an unintentionally caused handle action when it is truly necessary to restrain the turning of the handle, according to whether the cause of a handle action is intentional or unintentional.

In the invention, a rotation type steering damper (10) is provided coaxially with a steering shaft, and generation of a damping force or zero damping force is selected through changeover by a variable valve (38) provided in a bypass passage (37) for communication between a right liquid chamber (34) and a left liquid chamber (35) of the steering damper (10). The changeover is controlled by a control device (40), which functions based on the direction of a moment exerted on the steering shaft detected by a moment sensor (31) and the magnitude and direction of a rotational angular velocity concerning the turning of the steering shaft detected by a rotational angular velocity sensor (41), and so controls that a damping force is generated only when an unintentionally caused handle turning action opposite in direction to the moment is present and the rotational angular velocity has exceeded a predetermined threshold value.

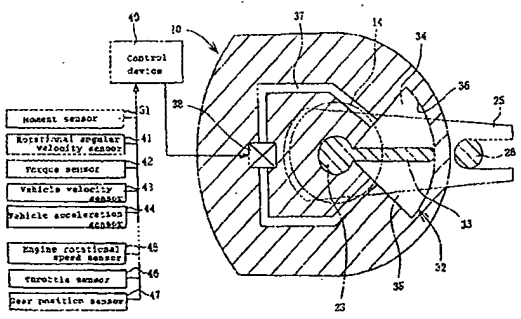

FIG. 4

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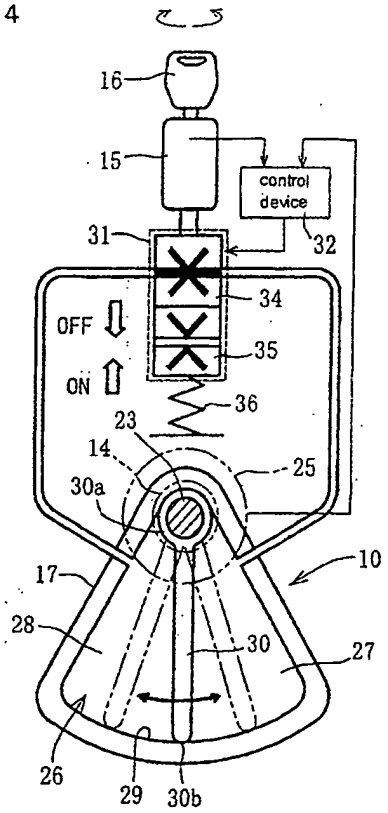
(54) Saddle-ride type vehicle steering damper apparatus

(57) Purpose; If a steering damper is fixed to a top bridge, as the steering damper is comparatively heavy and the top bridge is on the steering side, steering inertia increases.

Accordingly, arrangement structure of the steering damper which does not greatly influence the steering inertia is realized.

Construction: A rotatable partition wall 30 is provided in a hydraulic chamber 26 of a steering damper 10 to partition the inside into right hydraulic chamber 27 and left hydraulic chamber 28. A shaft 23 provided at one end of the partition wall 30 is integrally and rotatably coupled to a coaxial steering shaft 14. The both hydraulic chambers 27 and 28 are communicated with each other by a liquid passage 33, and a control valve 31 provided in an intermediate part of the passage is switched to a lock 34 or a throttle 35 thereby a damping force zero status or a damping force generation status is set. The switching is controlled by a control device 32 in correspondence with ON/OFF of a main switch 15. Further, the throttle 35 makes a cross-sectional area of the passage variable, and this control is also made by the control device 32 based on a turning angle speed of the steering shaft 14. A comparatively heavy part such as a main body 17 forming a casing of the steering damper 10 is fixed to a vehicle body front part supporting the steering shaft 14, and the comparatively light-weight partition wall 30, on the steering side.

FIG. 4



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(54) Steering device

(57) A steering device for a two-wheeler of the present invention includes: a frame (5); a support member (1) for a front wheel; a steering shaft (4) connecting the support member to the frame (5) so as to be rotatable about an axis thereof; and a rotary type steering damper (10) providing a hydraulic resistance force in no matter which direction the support member rotates with respect to the frame. The steering damper has a vane (12) adapted to swing in synchronism with rotation of the support member (1), oil chambers (R1,R2) defined on both sides of the vane and filled with working fluid, a flow passage (120) causing working fluid to flow from one oil chamber (R1) to the other oil chamber (R2) as the vane swings, and a damping valve (20) arranged in a flow passage for the working fluid, and an opening of the damping valve (20) is varied by a signal from outside to thereby generate a damping force optimized according to the travel condition.

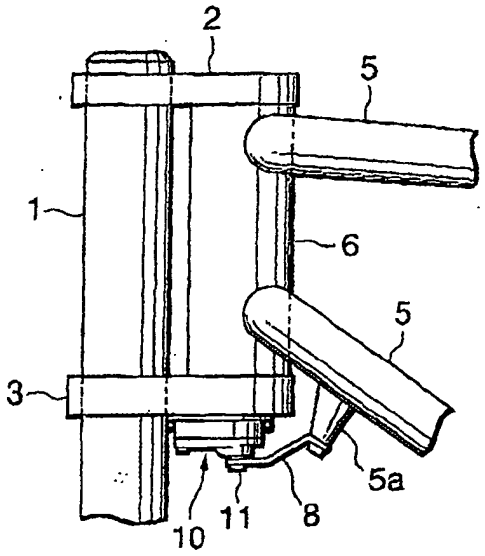

Fig.1

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